

Chapter 10. Emergencies

Section 1. General

10-1-1. EMERGENCY DETERMINATIONS

a. An emergency can be either a *Distress* or an *Urgency* condition as defined in the "Pilot/Controller Glossary."

b. A pilot who encounters a *Distress* condition should declare an emergency by beginning the initial communication with the word "Mayday," preferably repeated three times. For an *Urgency* condition, the word "Pan-Pan" should be used in the same manner.

c. If the words "Mayday" or "Pan-Pan" are not used and you are in doubt that a situation constitutes an emergency or potential emergency, handle it as though it were an emergency.

d. Because of the infinite variety of possible emergency situations, specific procedures cannot be prescribed. However, when you believe an emergency exists or is imminent, select and pursue a course of action which appears to be most appropriate under the circumstances and which most nearly conforms to the instructions in this manual.

REFERENCE-

FAAO 7110.65, *IFR Military Training Routes, Para 9-3-7.*

10-1-2. OBTAINING INFORMATION

Obtain enough information to handle the emergency intelligently. Base your decision as to what type of assistance is needed on information and requests received from the pilot because he/she is authorized by 14 CFR Part 91 to determine a course of action.

10-1-3. PROVIDING ASSISTANCE

Provide maximum assistance to aircraft in distress. Enlist the services of available radar facilities and DF facilities operated by the FAA, the military services, and the Federal Communications Commission, as well as their emergency services and facilities, when the pilot requests or when you deem necessary.

REFERENCE-

FAAO 7110.65, *Operational Priority, Para 2-1-4.*

10-1-4. RESPONSIBILITY

a. If you are in communication with an aircraft in distress, handle the emergency and coordinate and direct the activities of assisting facilities. Transfer this responsibility to another facility only when you feel better handling of the emergency will result.

b. When you receive information about an aircraft in distress, forward detailed data to the center in whose area the emergency exists.

NOTE-

1. Centers serve as the central points for collecting information, for coordinating with SAR, and for conducting a communications search by distributing any necessary ALNOT's concerning:

a. Overdue or missing IFR aircraft.

b. Aircraft in an emergency situation occurring in their respective area.

c. Aircraft on a combination VFR/IFR or an airfiled IFR flight plan and 30 minutes have passed since the pilot requested IFR clearance and neither communication nor radar contact can be established with it. For SAR purposes, these aircraft are treated the same as IFR aircraft.

d. Overdue or missing aircraft which have been authorized to operate in accordance with special VFR clearances.

2. Notifying the center about a VFR aircraft emergency allows provision of IFR separation if considered necessary.

REFERENCE-

FAAO 7110.65, *Emergency Situations, Para 10-2-5.*

FAAO 7110.65, *Information to be Forwarded to ARTCC, Para 10-3-2.*

FAAO 7110.65, *Information to be Forwarded to RCC, Para 10-3-3.*

c. If the aircraft involved is operated by a foreign air carrier, notify the center serving the departure or destination point, when either point is within the U.S., for relay to the operator of the aircraft.

d. The ARTCC shall be responsible for receiving and relaying all pertinent ELT signal information to the appropriate authorities.

REFERENCE-

FAAO 7110.65, *Emergency Locator Transmitter (ELT) Signals, Para 10-2-10.*

e. When consideration is given to the need to escort an aircraft in distress, evaluate the close formation required by both aircraft. Special consideration should be given if the maneuver takes the aircraft through the clouds.

f. Before a determination is made to have an aircraft in distress be escorted by another aircraft, ask the pilots if they are familiar with and capable of formation flight.

1. Do not allow aircraft to join up in formation during emergency conditions, unless:

(a) The pilots involved are familiar with and capable of formation flight.

(b) They can communicate with one another, and have visual contact with each other.

2. If there is a need for aircraft that are not designated as search and rescue aircraft to get closer to one another than radar separation standards allow, the maneuver shall be accomplished, visually, by the aircraft involved.

10-1-5. COORDINATION

Coordinate efforts to the extent possible to assist any aircraft believed overdue, lost, or in emergency status.

10-1-6. AIRPORT GROUND EMERGENCY

TERMINAL

When an emergency occurs on the airport proper, control other air and ground traffic to avoid conflicts in the area where the emergency is being handled. This also applies when routes within the airport proper are required for movement of local emergency equipment going to or from an emergency which occurs outside the airport proper.

NOTE-

Aircraft operated in proximity to accident or other emergency or disaster locations may cause hindrances to airborne and surface rescue or relief operations. Congestion, distraction or other effects, such as wake turbulence from nearby airplanes and helicopters, could prevent or delay proper execution of these operations.

REFERENCE-

*FAAO 7210.3, Chapter 18, Section 4. Temporary Flight Restrictions.
14 CFR Section 91.137, Temporary Flight Restrictions.*

10-1-7. INFLIGHT EMERGENCIES INVOLVING MILITARY FIGHTER-TYPE AIRCRAFT

a. The design and complexity of military fighter-type aircraft places an extremely high workload on the pilot during an inflight emergency. The pilot's full attention is required to maintain control of the aircraft. Therefore, radio frequency and transponder code changes should be avoided and radio transmissions held to a minimum, especially when the aircraft experiencing the emergency is at low altitude.

b. Pilots of military fighter-type aircraft, normally single engine, experiencing or anticipating loss of engine power or control may execute a flameout pattern in an emergency situation. Circumstances may dictate that the pilot, depending on the position and nature of the emergency, modify the pattern based on actual emergency recovery requirements.

c. Military airfields with an assigned flying mission may conduct practice emergency approaches. Participating units maintain specific procedures for conducting these operations.

REFERENCE-

FAAO 7110.65, Simulated Flameout (SFO) Approaches/Practice Precautionary Approaches, Para 3-10-13.

Section 2. Emergency Assistance

10-2-1. INFORMATION REQUIREMENTS

a. Start assistance as soon as enough information has been obtained upon which to act. Information requirements will vary, depending on the existing situation. Minimum required information for inflight emergencies is:

NOTE-

In the event of an ELT signal see para 10-2-10, Emergency Locator Transmitter (ELT) Signals.

1. Aircraft identification and type.
2. Nature of the emergency.
3. Pilot's desires.

b. After initiating action, obtain the following items or any other pertinent information from the pilot or aircraft operator, as necessary:

NOTE-

Normally, do not request this information from military fighter-type aircraft that are at low altitudes (i.e. on approach, immediately after departure, on a low level route, etc.). However, request the position of an aircraft that is not visually sighted or displayed on radar if the location is not given by the pilot.

1. Aircraft altitude.
2. Fuel remaining in time.
3. Pilot reported weather.
4. Pilot capability for IFR flight.
5. Time and place of last known position.
6. Heading since last known position.
7. Airspeed.
8. Navigation equipment capability.
9. NAVAID signals received.
10. Visible landmarks.
11. Aircraft color.
12. Number of people on board.
13. Point of departure and destination.
14. Emergency equipment on board.

10-2-2. FREQUENCY CHANGES

Although 121.5 MHz and 243.0 MHz are emergency frequencies, it might be best to keep the aircraft on the initial contact frequency. Change frequencies only when there is a valid reason.

10-2-3. AIRCRAFT ORIENTATION

Orientate an aircraft by the means most appropriate to the circumstances. Recognized methods include:

- a. Radar.
- b. DF.
- c. NAVAID's.
- d. Pilotage.
- e. Sighting by other aircraft.

10-2-4. ALTITUDE CHANGE FOR IMPROVED RECEPTION

When you consider it necessary and if weather and circumstances permit, recommend that the aircraft maintain or increase altitude to improve communications, radar, or DF reception.

NOTE-

Aircraft with high-bypass turbofan engines (such as B747) encountering volcanic ash clouds have experienced total loss of power to all engines. Damage to engines due to volcanic ash ingestion increases as engine power is increased, therefore, climb while in the ash cloud is to be avoided where terrain permits.

REFERENCE-

AIM, Flight Operations in Volcanic Ash, Para 7-5-8.

10-2-5. EMERGENCY SITUATIONS

Consider that an aircraft emergency exists and inform the RCC or ARTCC and alert the appropriate DF facility when:

NOTE-

1. USAF facilities are only required to notify the ARTCC.
2. The requirement to alert DF facilities may be deleted if radar contact will be maintained throughout the duration of the emergency.

- a. An emergency is declared by either:
 1. The pilot.
 2. Facility personnel.

3. Officials responsible for the operation of the aircraft.

b. There is unexpected loss of radar contact and radio communications with any IFR or VFR aircraft.

c. Reports indicate it has made a forced landing, is about to do so, or its operating efficiency is so impaired that a forced landing will be necessary.

d. Reports indicate the crew has abandoned the aircraft or is about to do so.

e. An emergency radar beacon response is received.

NOTE-

EN ROUTE. During Stage A operation, Code 7700 causes EMRG to blink in field E of the data block.

f. Intercept or escort aircraft services are required.

g. The need for ground rescue appears likely.

h. An Emergency Locator Transmitter (ELT) signal is heard or reported.

REFERENCE-

FAAO 7110.65, Providing Assistance, Para 10-1-3.

FAAO 7110.65, Emergency Locator Transmitter (ELT) Signals, Para 10-2-10.

10-2-6. HIJACKED AIRCRAFT

When you observe a Mode 3/A Code 7500, do the following:

NOTE-

Military facilities will notify the appropriate FAA ARTCC, or the host nation agency responsible for en route control, of any indication that an aircraft is being hijacked. They will also provide full cooperation with the civil agencies in the control of such aircraft.

EN ROUTE. During narrowband radar operations, Code 7500 causes HIJK to blink in the data block.

NOTE-

Only nondiscrete CODE 7500 will be decoded as the hijack code.

a. Acknowledge and confirm receipt of Code 7500 by asking the pilot to verify it. If the aircraft is not being subjected to unlawful interference, the pilot should respond to the query by broadcasting in the clear that he/she is not being subjected to unlawful interference. If the reply is in the affirmative or if no reply is received, do not question the pilot further but be responsive to the aircraft requests.

PHRASEOLOGY-

(Identification) (name of facility) VERIFY SQUAWKING 7500.

NOTE-

Code 7500 is only assigned upon notification from the pilot that his/her aircraft is being subjected to unlawful interference. Therefore, pilots have been requested to refuse the assignment of Code 7500 in any other situation and to inform the controller accordingly.

b. Notify supervisory personnel of the situation.

c. Flight follow aircraft and use normal handoff procedures without requiring transmissions or responses by aircraft unless communications have been established by the aircraft.

d. If aircraft are dispatched to escort the hijacked aircraft, provide all possible assistance to the escort aircraft to aid in placing them in a position behind the hijacked aircraft.

NOTE-

Escort procedures are contained in FAAO 7610.4, Special Military Operations, Chapter 7, Escort of Hijacked Aircraft.

e. To the extent possible, afford the same control service to the aircraft operating VFR observed on the hijack code.

REFERENCE-

FAAO 7110.65, Code Monitor, Para 5-2-13.

10-2-7. VFR AIRCRAFT IN WEATHER DIFFICULTY

a. If VFR aircraft requests assistance when it encounters or is about to encounter IFR weather conditions, request the aircraft to contact the appropriate control facility. Inform that facility of the situation. If the aircraft is unable to communicate with the control facility, relay information and clearances.

b. The following shall be accomplished on a Mode C equipped VFR aircraft which is in emergency but no longer requires the assignment of Code 7700:

1. **TERMINAL.** Assign a beacon code that will permit terminal minimum safe altitude warning (MSAW) alarm processing.

2. **EN ROUTE.** An appropriate keyboard entry shall be made to ensure en route MSAW (EMSAW) alarm processing.

10-2-8. RADAR ASSISTANCE TO VFR AIRCRAFT IN WEATHER DIFFICULTY

a. If a VFR aircraft requests radar assistance when it encounters or is about to encounter IFR weather conditions, ask the pilot if he/she is qualified for and capable of conducting IFR flight.

b. If the pilot states he/she is qualified for and capable of IFR flight, request him/her to file an IFR flight plan and then issue clearance to destination airport, as appropriate.

c. If the pilot states he/she is not qualified for or not capable of conducting IFR flight, or if he/she refuses to file an IFR flight plan, take whichever of the following actions is appropriate:

1. Inform the pilot of airports where VFR conditions are reported, provide other available pertinent weather information, and ask if he/she will elect to conduct VFR flight to such an airport.

2. If the action in subpara 1 above is not feasible or the pilot declines to conduct VFR flight to another airport, provide radar assistance if the pilot:

(a) Declares an emergency.

(b) Refuses to declare an emergency and you have determined the exact nature of the radar services the pilot desires.

3. If the aircraft has already encountered IFR conditions, inform the pilot of the appropriate terrain/obstacle clearance minimum altitude. If the aircraft is below appropriate terrain/obstacle clearance minimum altitude and sufficiently accurate position information has been received or radar identification is established, furnish a heading or radial on which to climb to reach appropriate terrain/obstacle clearance minimum altitude.

d. The following shall be accomplished on a Mode C equipped VFR aircraft which is in emergency but no longer requires the assignment of *Code 7700*:

1. **TERMINAL.** Assign a beacon code that will permit terminal minimum safe altitude warning (MSAW) alarm processing.

2. **EN ROUTE.** An appropriate keyboard entry shall be made to ensure en route MSAW (EMSAW) alarm processing.

10-2-9. RADAR ASSISTANCE TECHNIQUES

Use the following techniques to the extent possible when you provide radar assistance to a pilot not qualified to operate in IFR conditions:

a. Avoid radio frequency changes except when necessary to provide a clear communications channel.

b. Make turns while the aircraft is in VFR conditions so it will be in a position to fly a straight course while in IFR conditions.

c. Have pilot lower gear and slow aircraft to approach speed while in VFR conditions.

d. Avoid requiring a climb or descent while in a turn if in IFR conditions.

e. Avoid abrupt maneuvers.

f. Vector aircraft to VFR conditions.

g. The following shall be accomplished on a Mode C equipped VFR aircraft which is in emergency but no longer requires the assignment of Code 7700:

1. **TERMINAL.** Assign a beacon code that will permit terminal minimum safe altitude warning (MSAW) alarm processing.

2. **EN ROUTE.** An appropriate keyboard entry shall be made to ensure en route MSAW (EMSAW) alarm processing.

10-2-10. EMERGENCY LOCATOR TRANSMITTER (ELT) SIGNALS

When an ELT signal is heard or reported:

a. **EN ROUTE.** Notify the Rescue Coordination Center (RCC).

NOTE-

FAA Form 7210-8, *ELT INCIDENT*, contains standardized format for coordination with the RCC.

REFERENCE-

FAAO 7210.3, *FAA Form 7210-8, ELT Incident, Para 9-3-1.*

b. **TERMINAL.** Notify the ARTCC which will coordinate with the RCC.

NOTE-

1. Operational ground testing of emergency locator transmitters (ELT's) has been authorized during the first 5 minutes of each hour. To avoid confusing the tests with an actual alarm, the testing is restricted to no more than three audio sweeps.

2. Controllers can expect pilots to report aircraft position and time the signal was first heard, aircraft position and time the signal was last heard, aircraft position at maximum signal strength, flight altitude, and frequency of the emergency signal (121.5/243.0). (See AIM, *Emergency Locator Transmitter (ELT)*, Para 6-2-5.)

c. **EN ROUTE.** Request DF facilities obtain fixes or bearings on signal. Forward bearings or fixes obtained plus any other pertinent information to the RCC.

d. TERMINAL. Attempt to obtain fixes or bearings on the signal.

e. Solicit the assistance of other aircraft known to be operating in the signal area.

f. TERMINAL. Forward fixes or bearings and any other pertinent information to the ARTCC.

NOTE-

Fix information in relation to a VOR or VORTAC (radial-distance) facilitates accurate ELT plotting by RCC and should be provided when possible.

g. EN ROUTE. When the ELT signal strength indicates the signal may be emanating from somewhere on an airport or vicinity thereof, notify the on-site airway facilities personnel and the Regional Operations Center (ROC) for their actions. This action is in addition to the above.

h. TERMINAL. When the ELT signal strength indicates the signal may be emanating from somewhere on the airport or vicinity thereof, notify the on-site airway facilities personnel and the ARTCC for their action. This action is in addition to the above.

i. Air Traffic personnel shall not leave their required duty stations to locate an ELT signal source.

NOTE-

Portable handcarried receivers assigned to air traffic facilities (where no airway facilities personnel are available) may be loaned to responsible airport personnel or local authorities to assist in locating the ELT signal source.

j. EN ROUTE. Notify the RCC, the ROC, and alerted DF facilities if signal source is located/terminated.

k. TERMINAL. Notify the ARTCC if signal source is located/terminated.

REFERENCE-

FAAO 7110.65, Responsibility, Para 10-1-4.

FAAO 7110.65, Information Requirements, Para 10-2-1.

10-2-11. AIRCRAFT BOMB THREATS

a. When information is received from any source that a bomb has been placed on, in, or near an aircraft for the purpose of damaging or destroying such aircraft, notify your supervisor or the facility air traffic manager. If the threat is general in nature, handle it as a "Suspicious Activity." When the threat is targeted against a specific aircraft and you are in contact with the suspect aircraft, take the following actions as appropriate:

NOTE-

1. Facility supervisors are expected to notify the appropriate offices, agencies, operators/air carriers according to applicable plans, directives, and FAAO 7210.3, Handling Bomb Threat Incidents, Para 2-1-8, or applicable military directives.

2. "Suspicious activity" is covered in FAAO 7210.3, Suspicious Activities, Para 2-7-6. Military facilities would report a "general" threat through the chain of command or according to service directives.

1. Advise the pilot of the threat.

2. Inform the pilot that technical assistance can be obtained from an FAA aviation explosives expert.

NOTE-

An FAA aviation explosive expert is on call at all times and may be contacted by calling the FAA Operations Center, Washington, DC, Area Code 202-267-3333, ETN 521-0111, or DSN 667-5592. Technical advice can be relayed to assist civil or military air crews in their search for a bomb and in determining what precautionary action to take if one is found.

3. Ask the pilot if he/she desires to climb or descend to an altitude that would equalize or reduce the outside air pressure/existing cabin air pressure differential. Issue or relay an appropriate clearance considering MEA, MOCA, MRA, and weather.

NOTE-

Equalizing existing cabin air pressure with outside air pressure is a key step which the pilot may wish to take to minimize the damage potential of a bomb.

4. Handle the aircraft as an emergency and/or provide the most expeditious handling possible with respect to the safety of other aircraft, ground facilities, and personnel.

NOTE-

Emergency handling is discretionary and should be based on the situation. With certain types of threats, plans may call for a low-key action or response.

5. Issue or relay clearances to a new destination if requested.

6. When a pilot requests technical assistance or if it is apparent that a pilot may need such assistance, do NOT suggest what actions the pilot should take concerning a bomb, but obtain the following information and notify your supervisor who will contact the FAA aviation explosives expert:

NOTE-

This information is needed by the FAA aviation explosives expert so that he/she can assess the situation and make immediate recommendations to the pilot. The aviation explosives expert may not be familiar with all military aircraft configurations but he/she can offer technical assistance which would be beneficial to the pilot.

- (a) Type, series, and model of the aircraft.
- (b) Precise location/description of the bomb device if known.
- (c) Other details which may be pertinent.

NOTE-

The following details may be of significance if known, but it is not intended that the pilot should disturb a suspected bomb/bomb container to ascertain the information: The altitude or time set for the bomb to explode, type of detonating action (barometric, time, anti-handling, remote radio transmitter), power source (battery, electrical, mechanical), type of initiator (blasting cap, flash bulb, chemical), and the type of explosive/incendiary charge (dynamite, black powder, chemical).

b. When a bomb threat involves an aircraft on the ground and you are in contact with the suspect aircraft, take the following actions in addition to those discussed in the preceding paragraphs which may be appropriate:

1. If the aircraft is at an airport where tower control or FSS advisory service is not available, or if the pilot ignores the threat at any airport, recommend that takeoff be delayed until the pilot or aircraft operator establishes that a bomb is not aboard in accordance with 14 CFR Part 121. If the pilot insists on taking off and in your opinion the operation will not adversely affect other traffic, issue or relay an ATC clearance.

REFERENCE-

14 CFR Section 121.538, Airplane Security.

2. Advise the aircraft to remain as far away from other aircraft and facilities as possible, to clear the runway, if appropriate, and to taxi to an isolated or designated search area. When it is impractical or if the pilot takes an alternative action; e.g., parking and off-loading immediately, advise other aircraft to remain clear of the suspect aircraft by at least 100 yards if able.

NOTE-

Passenger deplaning may be of paramount importance and must be considered before the aircraft is parked or moved away from service areas. The decision to use ramp facilities rests with the pilot, aircraft operator/airport manager.

c. If you are unable to inform the suspect aircraft of a bomb threat or if you lose contact with the aircraft, advise your supervisor and relay pertinent details to other sectors or facilities as deemed necessary.

d. When a pilot reports the discovery of a bomb or suspected bomb on an aircraft which is airborne or on the ground, determine the pilot's intentions and comply with his/her requests in so far as possible. Take all of the actions discussed in the preceding paragraphs which may be appropriate under the existing circumstances.

e. The handling of aircraft when a hijacker has or is suspected of having a bomb requires special considerations. Be responsive to the pilot's requests and notify supervisory personnel. Apply hijacking procedures and offer assistance to the pilot according to the preceding paragraphs, if needed.

10-2-12. EXPLOSIVE DETECTION K-9 TEAMS

Take the following actions should you receive an aircraft request for the location of the nearest explosive detection K-9 team.

REFERENCE-

FAAO 7210.3, Explosives Detection K-9 Teams, Para 2-1-10.

- a. Obtain the aircraft identification and position and advise your supervisor of the pilot request.
- b. When you receive the nearest location of the explosive detection K-9 team, relay the information to the pilot.
- c. If the aircraft wishes to divert to the airport location provided, obtain an estimated arrival time from the pilot and advise your supervisor.

10-2-13. EMERGENCY AIRPORT RECOMMENDATION

a. Consider the following factors when recommending an emergency airport:

1. Remaining fuel in relation to airport distances.
2. Weather conditions.

NOTE-

Depending on the nature of the emergency, certain weather phenomena may deserve weighted consideration when recommending an airport; e.g., a pilot may elect to fly farther to land at an airport with VFR instead of IFR conditions.

3. Airport conditions.
4. NAVAID status.
5. Aircraft type.

6. Pilot's qualifications.

7. Vectoring or homing capability to the emergency airport.

b. Consideration to the provisions of subpara a and para 10-2-14, Guidance to Emergency Airport, shall be used in conjunction with the information derived from any automated emergency airport information source.

10-2-14. GUIDANCE TO EMERGENCY AIRPORT

a. When necessary, use any of the following for guidance to the airport:

1. Radar.
2. DF.
3. Following another aircraft.
4. NAVAID's.
5. Pilotage by landmarks.
6. Compass headings.

b. Consideration to the provisions of para 10-2-13, Emergency Airport Recommendation, shall be used in conjunction with the information derived from any automated emergency airport information source.

10-2-15. EMERGENCY OBSTRUCTION VIDEO MAP (EOVM)

a. The EOVM is intended to facilitate advisory service to an aircraft in an emergency situation wherein an appropriate terrain/obstacle clearance minimum altitude cannot be maintained. It shall only be used and the service provided under the following conditions:

1. The pilot has declared an emergency, or
2. The controller has determined that an emergency condition exists or is imminent because of the pilot's inability to maintain an appropriate terrain/obstacle clearance minimum altitude.

NOTE-

Appropriate terrain/obstacle clearance minimum altitudes may be defined as Minimum IFR Altitude (MLA), Minimum En Route Altitude (MEA), Minimum Obstruction Clearance Altitude (MOCA), or Minimum Vectoring Altitude (MVA).

b. When providing emergency vectoring service, the controller shall advise the pilot that any headings issued are emergency advisories intended only to direct the aircraft toward and over an area of lower terrain/obstacle elevation.

NOTE-

Altitudes and obstructions depicted on the EOVM are the actual altitudes and locations of the obstacle/terrain and contain no lateral or vertical buffers for obstruction clearance.

REFERENCE-

FAAO 7210.3, Emergency Obstruction Video Map (EOVM), Para 3-9-4.

10-2-16. VOLCANIC ASH

a. If a volcanic ash cloud is known or forecast to be present:

1. Relay all information available to pilots to ensure that they are aware of the ash cloud's position and altitude(s).
2. Suggest appropriate reroutes to avoid the area of known or forecast ash clouds.

NOTE-

Volcanic ash clouds are not normally detected by airborne or air traffic radar systems.

b. If advised by an aircraft that it has entered a volcanic ash cloud and indicates that a distress situation exists:

1. Consider the aircraft to be in an emergency situation.
2. Do not initiate any climb clearances to turbine powered aircraft until the aircraft has exited the ash cloud.
3. Do not attempt to provide escape vectors without pilot concurrence.

NOTE-

1. The recommended escape maneuver is to reverse course and begin a descent (if terrain permits). However, it is the pilot's responsibility to determine the safest escape route from the ash cloud.

2. Controllers should be aware of the possibility of complete loss of power to any turbine powered aircraft that encounters an ash cloud.

REFERENCE-

FAAO 7110.65, Altitude Change for Improved Reception, Para 10-2-4. AIM, Flight Operations in Volcanic Ash, Para 7-5-8.

Section 3. Overdue Aircraft

10-3-1. OVERDUE AIRCRAFT

a. Consider an aircraft to be overdue, initiate the procedures stated in this section and issue an ALNOT when neither communications nor radar contact can be established and 30 minutes have passed since:

NOTE-

The procedures in this section also apply to an aircraft referred to as "missing" or "unreported."

1. Its ETA over a specified or compulsory reporting point or at a clearance limit in your area.

2. Its clearance void time.

b. If you have reason to believe that an aircraft is overdue prior to 30 minutes, take the appropriate action immediately.

c. The center in whose area the aircraft is first unreported or overdue will make these determinations and takes any subsequent action required.

REFERENCE-

FAAO 7110.65, Departure Restrictions, Clearance Void Times, Hold for Release and Release Times, Para 4-3-4.

10-3-2. INFORMATION TO BE FORWARDED TO ARTCC

TERMINAL

When an aircraft is considered to be in emergency status that may require SAR procedures, or an IFR aircraft is overdue, the terminal facility shall alert the ARTCC and forward the following information, as available:

- a. Flight plan, including color of aircraft, if known.
- b. Time of last transmission received, by whom, and frequency used.
- c. Last position report and how determined.
- d. Action taken by reporting facility and proposed action.
- e. Number of persons on board.
- f. Fuel status.
- g. Facility working aircraft and frequency.
- h. Last known position, estimated present position, and maximum range of flight of the aircraft based on remaining fuel and airspeed.
- i. Position of other aircraft near aircraft's route of flight, when requested.

j. Whether or not an ELT signal has been heard or reported in the vicinity of the last known position.

k. Other pertinent information.

REFERENCE-

*FAAO 7110.65, Responsibility, Para 10-1-4,
FAAO 7110.65, Emergency Situations, Para 10-2-5.*

NOTE-

FSS's serve as the central points for collecting and disseminating information on an overdue or missing aircraft which is not on an IFR flight plan. Non-FSS ATC facilities that receive telephone calls or other inquiries regarding these flights shall refer these calls and inquiries to the appropriate AFSS/FSS.

10-3-3. INFORMATION TO BE FORWARDED TO RCC

EN ROUTE

When an aircraft is considered to be in emergency status or an IFR aircraft is overdue, the ARTCC shall alert the RCC and forward the following information, as available:

- a. Facility and person calling.
- b. Flight plan, including color of aircraft, if known.
- c. Time of last transmission received, by whom, and frequency used.
- d. Last position report and how determined.
- e. Action taken by reporting facility and proposed action.
- f. Number of persons on board.
- g. Fuel status.
- h. Facility working aircraft and frequency.
- i. Last known position, estimated present position, and maximum range of flight of the aircraft based on remaining fuel and airspeed.
- j. Position of other aircraft near aircraft's route of flight, when requested.
- k. Whether or not an ELT signal has been heard or reported in the vicinity of the last known position.
- l. Other pertinent information.

REFERENCE-

*FAAO 7110.65, Responsibility, Para 10-1-4,
FAAO 7110.65, Emergency Situations, Para 10-2-5.*

NOTE-

FSS's serve as the central points for collecting and disseminating information on an overdue or missing aircraft which is not on an IFR flight plan. Non-FSS ATC facilities that receive telephone calls or other inquiries regarding these flights shall refer these calls and inquiries to the appropriate AFSS/FSS.

10-3-4. ALNOT**EN ROUTE**

a. In addition to routing to your regional office operations center, issue an ALNOT to all centers and Area B circuits, generally 50 miles on either side of the route of flight from the last reported position to destination. Include the original or amended flight plan, as appropriate, and the last known position of the aircraft. At the recommendation of the RCC or at your discretion, the ALNOT may be issued to cover the maximum range of the aircraft.

NOTE-

1. *An ALNOT must be issued before the RCC can begin search and rescue procedures.*

2. *Flight plan information on military aircraft is available at the FSS serving as a tie-in station for the departure or destination airport. FAA tie-in stations for airports in the continental U.S. are listed in the location identifiers handbook. In the Western-Pacific Region, tie-in stations are listed in regional publications entitled, "Flight Plan Routing and Airport Search Directory." For flights with overseas departure points, the information is available through the destination FSS or the appropriate IFSS.*

b. Upon receipt of an INREQ or ALNOT, check the position records to determine whether the aircraft has

contacted your facility. Notify the originator of the results or status of this check within one hour of the time the alert was received. Retain the alert in an active status, and immediately notify the originator of subsequent contact, until cancellation is received.

10-3-5. RESPONSIBILITY TRANSFER TO RCC**EN ROUTE**

Transfer responsibility for further search to the RCC when one of the following occurs:

a. Thirty minutes have elapsed after the estimated aircraft fuel exhaustion time.

b. The aircraft has not been located within one hour after ALNOT issuance.

c. The ALNOT search has been completed with negative results.

10-3-6. AIRCRAFT POSITION PLOTS

Plot the flight path of the aircraft on a chart, including position reports, predicted positions, possible range of flight, and any other pertinent information. Solicit the assistance of other aircraft known to be operating near the aircraft in distress. Forward this information to the RCC or the ARTCC as appropriate.

10-3-7. ALNOT CANCELLATION**EN ROUTE**

Cancel the ALNOT when the aircraft is located or the search is abandoned.

Section 4. Control Actions

10-4-1. TRAFFIC RESTRICTIONS

IFR traffic which could be affected by an overdue or unreported aircraft shall be restricted or suspended unless radar separation is used. The facility responsible shall restrict or suspend IFR traffic for a period of 30 minutes following the applicable time listed in subparagraphs a thru e:

- a. The time at which approach clearance was delivered to the pilot.
- b. The EFC time delivered to the pilot.
- c. The arrival time over the NAVAID serving the destination airport.
- d. The current estimate, either the control facility's or the pilot's, whichever is later, at:
 1. The appropriate en route NAVAID or fix, and
 2. The NAVAID serving the destination airport.
- e. The release time and, if issued, the clearance void time.

REFERENCE-
FAAO 7110.65, *Departure Restrictions, Clearance Void Times, Hold for Release, and Release Times, Para 4-3-4.*

10-4-2. LIGHTING REQUIREMENTS

a. **ENROUTE.** At nontower or non-FSS locations, request the airport management to light all runway lights, approach lights, and all other required airport lighting systems for at least 30 minutes before the ETA of the unreported aircraft until the aircraft has been located or for 30 minutes after its fuel supply is estimated to be exhausted.

b. **TERMINAL.** Operate runway lights, approach lights, and all other required airport lighting systems for at least 30 minutes before the ETA of the unreported aircraft until the aircraft has been located or for 30 minutes after its fuel supply is estimated to be exhausted.

REFERENCE-
FAAO 7110.65, *Emergency Lighting, Para 3-4-1.*

10-4-3. TRAFFIC RESUMPTION

After the 30-minute traffic suspension period has expired, resume normal air traffic control if the operators or pilots of other aircraft concur. This

concurrence must be maintained for a period of 30 minutes after the suspension period has expired.

REFERENCE-
FAAO 7110.65 *Departure Restrictions, Clearance Void Times, Hold for Release, and Release Times, Para 4-3-4.*

10-4-4. COMMUNICATIONS FAILURE

Take the following actions, as appropriate, if two-way radio communications are lost with an aircraft:

NOTE-

1. When an IFR aircraft experiences two-way radio communications failure, air traffic control is based on anticipated pilot actions. Pilot procedures and recommended practices are set forth in the AIM, CFR's, and pertinent military regulations.

2. Should the pilot of an aircraft equipped with a coded radar beacon transponder experience a loss of two-way radio capability, the pilot can be expected to adjust the transponder to reply on Mode 3/A Code 7600.

a. In the event of lost communications with an aircraft under your control jurisdiction use all appropriate means available to reestablish communications with the aircraft. These may include, but not be limited to, emergency frequencies, NAVAID's that are equipped with voice capability, FSS, Aeronautical Radio Incorporated (ARINC), etc.

NOTE-

1. ARINC is a commercial communications corporation which designs, constructs, operates, leases or otherwise engages in radio activities serving the aviation community. ARINC has the capability of relaying information to/from subscribing aircraft throughout the country.

2. Aircraft communications addressing and reporting system (ACARS) or selective calling (SELCAL) may be utilized to reestablish radio communications with suitably equipped aircraft. ACARS can be accessed by contacting the San Francisco ARINC communications center, watch supervisor, at 925-294-8297 and 800-621-0140. Provide ARINC the aircraft call sign, approximate location, and contact instructions. In order to utilize the SELCAL system, the SELCAL code for the subject aircraft must be known. If the SELCAL code is not contained in the remarks section of the flight plan, contact the pertinent air carrier dispatch office to determine the code. Then contact the San Francisco ARINC communications center, watch supervisor, at 925-294-8297 and 800-621-0140. Provide ARINC the aircraft call sign, SELCAL code, approximate location, and contact instructions.

b. Broadcast clearances through any available means of communications including the voice feature of NAVAIID's.

NOTE-

1. *Some UHF equipped aircraft have VHF navigation equipment and can receive 121.5 MHz.*

2. *"Any available means" includes the use of FSS and ARINC.*

REFERENCE-

FAAO 7110.65, Clearance Prefix, Para 4-2-2.

c. Attempt to re-establish communication by having the aircraft use its transponder or make turns to acknowledge clearances and answer questions. Request any of the following in using the transponder:

1. Request the aircraft to reply Mode 3/A "IDENT."

2. Request the aircraft to reply on Code 7600 or if already on Code 7600, the appropriate stratum code.

3. Request the aircraft to change to "stand-by" for sufficient time for you to be sure that the lack of a target is the result of the requested action.

PHRASEOLOGY-

REPLY NOT RECEIVED, (appropriate instructions).

(Action) OBSERVED, (additional instructions/information if necessary).

d. Broadcast a clearance for the aircraft to proceed to its filed alternate airport at the MEA if the aircraft operator concurs.

REFERENCE-

FAAO 7110.65, Radio Failure, Para 5-2-8.

FAAO 7110.65, IFR Military Training Routes, Para 9-3-7.

Section 5. Miscellaneous Operations

10-5-1. NAVY FLEET SUPPORT MISSIONS

When you receive information concerning an emergency to a U.S. Navy "Special Flight Number" aircraft, do the following:

a. Handle Navy Fleet Support Mission aircraft as follows:

1. *EN ROUTE*. Relay immediately, via collect telephone call, all pertinent information to Fleet Operations Control at Norfolk, Virginia, telephone 804-444-6602.

2. *TERMINAL*. Inform the nearest center of all the pertinent information.

b. Relay the words "Special Flight Number" followed by the number given as part of the routine IFR flight information.

c. Honor pilot requests for changes to route, altitude, and destination, whenever possible.

10-5-2. EXPLOSIVE CARGO

TERMINAL

When you receive information that an emergency landing will be made with explosive cargo aboard, inform the pilot of the safest or least congested airport areas. Relay the explosive cargo information to:

a. The emergency equipment crew.

b. The airport management.

c. The appropriate military agencies, when requested by the pilot.

Section 6. Oceanic Emergency Procedures

10-6-1. APPLICATION

The procedures in this section are to be used solely in oceanic airspace.

10-6-2. PHASES OF EMERGENCY

Emergency phases are described as follows:

a. **Uncertainty phase (INCERFA).** When there is concern about the safety of an aircraft or its occupants, an INCERFA exists:

1. When communication from an aircraft has not been received within 30 minutes after the time a communication should have been received or after the time an unsuccessful attempt to establish communication with such aircraft was first made, whichever is earlier; or

2. When an aircraft fails to arrive within 30 minutes after the time of arrival last estimated by the pilot or by the ATC units, whichever is later.

b. **Alert phase (ALERFA).** When there is apprehension about the safety of an aircraft and its occupants, an ALERFA exists:

1. Following the uncertainty phase when subsequent attempts to establish communications with the aircraft, or inquiries to other relevant sources have failed to reveal any information about the aircraft; or

2. When information has been received which indicates that the operating efficiency of the aircraft has been impaired but not to the extent that a forced landing is likely; or

3. When communication from an aircraft has not been received within 60 minutes after the time a communication should have been received or after the time an unsuccessful attempt to establish communication with such aircraft was first made, whichever is earlier.

c. **Distress phase (DETRESFA).** When there is reasonable certainty that the aircraft and its occupants are threatened by grave and imminent danger, a DETRESFA exists:

1. Following the alert phase when further attempts to establish communications with the aircraft and more widespread inquiries are unsuccessful; or

2. When the fuel on board is considered to be exhausted or to be insufficient for the aircraft to reach safety; or

3. When information is received which indicates that the operating efficiency of the aircraft has been impaired to the extent that a forced landing is likely; or

4. When information is received or it is reasonably certain that the aircraft is about to make or has made a forced landing.

10-6-3. ALERTING SERVICE AND SPECIAL ASSISTANCE

a. Provide alerting service to:

1. All aircraft receiving ATC service;
2. All other aircraft which have filed a flight plan or which are otherwise known to the ATC unit; and
3. Any aircraft known or believed to be the subject of unlawful interference.

b. When alerting service is required, the responsibility for coordinating such service shall, unless otherwise established by letter of agreement, rest with the facility serving the FIR or CTA:

1. Within which the aircraft was flying at the time of last air-ground radio contact; or
2. Which the aircraft was about to enter if the last air-ground contact was established at or close to the boundary; or
3. Within which the point of destination is located if the aircraft:

(a) Was not equipped with suitable two-way radio communications equipment; or

(b) Was not under obligation to transmit position reports.

REFERENCE-

FAAO 7110.65, Chapter 8, Section 2, Coordination.

c. The responsible Area Control Center (ACC) shall serve as the control point for:

1. Collecting all information relevant to a state of emergency of an aircraft;
2. Forwarding that information to the appropriate RCC; and
3. Coordinating with other facilities concerned.

d. The responsibility of the ACC to provide alerting service for military aircraft may be waived upon a written or recorded request from a military agency. In this case, the military request must state that the military agency assumes full responsibility for their aircraft while the aircraft are operating in the oceanic airspace.

e. Responsibility to provide alerting service for flight operations conducted under the "due regard" or "operational" prerogative of military aircraft is assumed by the military. When "due regard" operations are scheduled to end with aircraft filed under ICAO procedures, the ACC may, if specified in a letter of agreement, assume responsibility for alerting service at proposed time filed.

f. In the event of INCERFA, ALERFA, or DETRESFA, notify the following:

1. When practicable, the aircraft operator.
2. The appropriate RCC.
3. Aeronautical stations having en route communications guard responsibilities at the point of departure, along or adjacent to the route of flight, and at the destination.
4. ACC's having jurisdiction over the proposed route of flight from the last reported position to the destination airport.

g. INCERFA, ALERFA, and DETRESFA messages shall include the following information, if available, in the order listed:

1. INCERFA, ALERFA, or DETRESFA according to the phase of the emergency.
2. Agency and person originating the message.
3. Nature of the emergency.
4. Significant flight plan information.
5. The air traffic unit which made the last radio contact, the time, and the frequency used.
6. The aircraft's last position report, how it was received, and what facility received it.
7. Color and distinctive marks of aircraft.
8. Any action taken by reporting office.
9. Other pertinent remarks.

h. An INCERFA phase ends with the receipt of any information or position report on the aircraft. Cancel the INCERFA by a message addressed to the same stations as the INCERFA message.

1. An ALERFA ends when:

(a) Evidence exists that would ease apprehension about the safety of the aircraft and its occupants; or

(b) The concerned aircraft lands. Cancel the ALERFA message by a message addressed to the same stations as the ALERFA message.

2. A DETRESFA ends when the:

(a) Aircraft successfully lands; or

(b) RCC advises of a successful rescue; or

(c) RCC advises of termination of SAR activities. Cancel the DETRESFA by a message addressed to the same stations as the DETRESFA message.

i. A separate chronological record should be kept on each ALERFA and DETRESFA together with a chart which displays the projected route of the aircraft, position reports received, route of interceptor aircraft, and other pertinent information.

10-6-4. INFLIGHT CONTINGENCIES

a. If an aircraft over water requests weather, sea conditions, ditching information, and/or assistance from surface vessels, or if the controller feels that this information may be necessary for aircraft safety, it should be requested from the RCC. Also, an appropriate AMVER SURPIC should be asked for if requested by the aircraft or deemed beneficial by control personnel.

NOTE-

The AMVER Center can deliver, in a matter of minutes, a SURPIC of vessels in the area of a SAR incident, including their predicted positions and their characteristics.

b. In all cases of aircraft ditching, the airspace required for SAR operations shall be determined by the RCC. The ACC shall block that airspace until the RCC advises the airspace is no longer required. An International Notice to Airmen (NOTAM) shall be issued describing the airspace affected.

c. The following actions will be taken in the event an aircraft must make an emergency descent:

1. In the event an aircraft requests an emergency descent:

(a) Issue a clearance to the requested altitude if approved separation can be provided.

(b) Advise the aircraft of the traffic, and request its intentions if traffic prevents an unrestricted descent.

PHRASEOLOGY-

ATC ADVISES (aircraft identification) UNABLE TO APPROVE UNRESTRICTED DESCENT.

*TRAFFIC (traffic information).
REQUEST INTENTIONS.*

2. In the event an aircraft is making or will make an emergency descent without a clearance:

(a) Advise other aircraft of the emergency descent.

PHRASEOLOGY-

ATC ADVISES (aircraft identification/all aircraft) BE ALERT FOR EMERGENCY DESCENT IN THE VICINITY OF (latitude/longitude) FROM (altitude/FL) TO (altitude/FL).

(b) Advise other aircraft when the emergency descent is complete.

PHRASEOLOGY-

(Aircraft identification/all aircraft) EMERGENCY DESCENT AT (location) COMPLETED.

3. Upon notification that an aircraft is making an emergency descent through other traffic, take action immediately to safeguard all aircraft concerned.

4. When appropriate, broadcast by ATC communications, by radio navigation aids, and/or through aeronautical communication stations/services an emergency message to all aircraft in the vicinity of the descending aircraft. Include the following information:

- (a) Location of emergency descent.
- (b) Direction of flight.
- (c) Type aircraft.
- (d) Route if appropriate.
- (e) Altitude vacated.
- (f) Other information.

EXAMPLE-

"Attention all aircraft in the vicinity of Trout, a northbound D-C Ten on A-T-S Route Alfa Seven Hundred is making an emergency descent from flight level three three zero." (Repeat as you deem appropriate.)

5. If traffic conditions permit, provide traffic information to the affected aircraft.

6. Immediately after an emergency broadcast or traffic information has been made, issue appropriate clearances or instructions, as necessary, to all aircraft involved.

10-6-5. SERVICES TO RESCUE AIRCRAFT

a. Provide standard IFR separation between the SAR and the aircraft in distress, except when visual or radar contact has been established by the search and rescue aircraft and the pilots of both aircraft concur, IFR separation may be discontinued.

b. Clear the SAR aircraft to a fixed clearance limit rather than to the aircraft in distress, which is a moving fix. Issue route clearances that are consistent with that of the distressed aircraft.

c. Advise the rescue aircraft, as soon as practicable, of any factors that could adversely affect its mission; e.g., unfavorable weather conditions, anticipated problems, the possibility of not being able to approve an IFR descent through en route traffic, etc.

d. Advise the appropriate rescue agency of all pertinent information as it develops.

e. Forward immediately any information about the action being taken by the RCC, other organizations, or aircraft to the aircraft concerned.

f. Advise the aircraft operator of the current status of the SAR operation as soon as practicable.

g. Since prompt, correct, and complete information is the key to successful rescue operations, ensure that this information is swiftly and smoothly supplied to those organizations actively engaged in rescue operations.

Section 7. Ground Missile Emergencies

10-7-1. INFORMATION RELAY

When you receive information concerning a ground missile emergency, notify other concerned facilities and take action to have alerting advisories issued by:

a. *EN ROUTE*. Air carrier company radio stations for each VFR company aircraft which is or will be operating in the vicinity of the emergency.

b. *EN ROUTE*. FSS's adjacent to the emergency location.

c. *TERMINAL*. Relay all information concerning a ground missile emergency to the ARTCC within whose area the emergency exists and disseminate as a NOTAM.

REFERENCE-

P/CG Term - Notice to Airmen.

10-7-2. IFR AND SVFR MINIMA

Reroute IFR and SVFR aircraft as necessary to avoid the emergency location by one of the following minima, or by greater minima when suggested by the notifying official:

a. Lateral separation- *1 mile* between the emergency location and either of the following:

1. An aircraft under radar control and the emergency location which can be accurately determined by reference to the radar scope.

2. The airspace to be protected for the route being flown.

b. Vertical separation- *6,000 feet* above the surface over the emergency location.

10-7-3. VFR MINIMA

Advise all known VFR aircraft which are, or will be, operating in the vicinity of a ground missile emergency, to avoid the emergency location by 1 mile laterally or 6,000 feet vertically, or by a greater distance or altitude, when suggested by the notifying official.

10-7-4. SMOKE COLUMN AVOIDANCE

Advise all aircraft to avoid any observed smoke columns in the vicinity of a ground missile emergency.

10-7-5. EXTENDED NOTIFICATION

EN ROUTE

When reports indicate that an emergency will exist for an extended period of time, a Notice to Airmen may be issued.